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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/611,402	07/06/2000	Paul F. Ringseth	3382-56061	6516

26119 7590 11/03/2005

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EXAMINER	
WOOD, WILLIAM H	
ART UNIT	PAPER NUMBER
2193	

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/611,402	RINGSETH ET AL.	
	Examiner	Art Unit	
	William H. Wood	2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 7/1/05
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-30 are pending and have been examined.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01 July 2005 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 and 3-4, 6-11, 13-18, 23-28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Williams** et al. (USPN 5,467,472) in view of **Gardner** et al. (USPN 6,701,352).

Claim 1

Williams disclosed in a computer system, a method of generating a interface implementation *(column 2, lines 42 and 52-67)*, the method comprising:

- receiving definition information interface features of a interface, interface including plural methods and one or more other methods *(column 2, lines 52-60, abstract class);*
- receiving programming language code for the one or more other methods, each of the one or more other methods having a name *(column 2, lines 60-67, implementation program/code);*
- generating a interface implementation for operating the one or more other methods *(column 2, line 42, compiling, compiler generates executable code from programming code)*, interface implementation including:
  - executable code for the one or more other methods *(column 2, line 42 and 60-67, object);*

Williams did not explicitly state dispatch interface from the definition information. **Gardner** demonstrated that it was known at the time of invention to implement dispatch interfaces (column 7, line 57 to column 8, line 24); including executable code for mapping identifiers (column 8, lines 1-15); and executable code for calling the other methods (column 8, lines 1-15). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the abstract class system of **Williams** with a description of dispatch late binding interface to implement as found in **Gardner**'s teaching. This implementation would have been obvious because one of ordinary skill

in the art would be motivated to provide object interface for as many environments as possible in order to facilitate greater acceptance and use in the marketplace (column 8, lines 20-24).

Claim 2

Williams and **Gardner** disclosed the limitation wherein the definition information is embedded in a file for the programming language code *(abstract class and class implementation can be in the same file of C++).*

Claim 3

Williams and **Gardner** disclosed the method of claim 1 wherein a file includes the programming language code and a statement for importing the definition information *(C++'s "#include" statement).*

Claim 4

Williams and **Gardner** disclosed the method of claim 1 wherein the generating comprises: in the second dispatch method implementation code, creating code for handling the arguments of one of the one or more other methods with a generic data structure *(**Gardner**: column 8, lines 1-15).*

Claim 6

Williams and **Gardner** did not explicitly state the method of claim 1 wherein the dispatch interface implementation further includes:

- executable code for a third dispatch method, the third dispatch method for determining the availability of type information for the dispatch interface *(**Gardner**: column 8, lines 1-15); and*
- executable code for a fourth dispatch method, the fourth dispatch method for retrieving available type information for the dispatch interface *(**Gardner**: column 8, lines 1-15).*

Claim 7

Williams disclosed a computer readable medium having stored thereon a computer executable compiler system that generates a implementation from definition information and programming language code *(column 2, lines 42 and 52-67),* the compiler system comprising:

- a front end module that receives definition information and programming language code, the definition information defining interface features of a interface, the programming language code for implementing one or more methods *(column 2, lines 52-67, interface through abstract class and code through implementation program/code);*
- a converter module that identifies relations between the definition information and the one or more methods during compilation, including

parsing the definition language information and the programming language code *(column 2, lines 60-67, implementation; also line 42, "compiler")*; and

- a back end module that generates a interface implementation based upon the relations, the interface implementation for operating the one or more methods *(column 2, line 42, compiler generates executable code from programming code)*

Williams did not explicitly state late bound. **Gardner** demonstrated that it was known at the time of invention to utilize definitions to implement dynamic/late binding, dispatchable (column 7, line 57 to column 8, line 24). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the abstract class system of **Williams** with a description of dispatch late binding interface to implement as found in **Gardner**'s teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide object interface for as many environments as possible in order to facilitate greater acceptance and use in the marketplace (column 8, lines 20-24).

Claim 8

Williams and **Gardner** disclosed the compiler system of claim 7 wherein the converter module identifies one or more relations, each relation between one of the one or more late bound methods and a corresponding identifier, and wherein based upon the one or more relations the back end module generates for each of the one or more late bound

methods code mapping the name of the late bound method to the corresponding identifier for the late bound method *(**Gardner**: column 8, lines 9-11)*.

Claim 9

Williams and **Gardner** disclosed the compiler system of claim 7 wherein the converter module identifies one or more relations, each relation between one of the one or more late bound methods and a corresponding identifier, and wherein based upon the one or more relations the back end module generates for each of the one or more late bound methods code for calling the late bound method upon receipt of the corresponding identifier for the late bound method (***Gardner**: column 8, lines 7-11*).

Claim 10

Williams and **Gardner** disclosed the compiler system of claim 7 wherein the converter module identifies one or more relations, each relation between type information and an argument of one of the one or more late bound methods, and wherein based upon the one or more relations the back end module generates code for handling the arguments of the late bound method with a generic data structure *(**Gardner**: column 8, lines 7-11)*.

Claim 11

Williams and **Gardner** disclosed the compiler system of claim 7 wherein the converter module identifies a relation between a property indicator and one of the one or more late bound methods, and wherein based upon the relation the back end module

generates code for retrieving or setting a corresponding property through the late bound method (***Gardner**: column 8, lines 1-15; dispatch).*

Claim 13

Williams disclosed a computer readable medium having stored thereon computer executable instructions for performing a method of automatically generating a interface implementation *(column 2, lines 42 and 52-67)*, the method comprising:

- receiving programming language code for one or more methods of a late binding interface *(column 2, lines 60-67, "implementing particular interfaces")*;
- receiving definition information that defines interface features of the late binding interface *(column 2, lines 52-60, abstract class)*;
- generating a interface implementation for operating the one or more methods, wherein the generating includes parsing the programming language code and the definition information during compilation, the interface implementation including one or more methods, a first method for calling the one or more methods responsive to client requests *(column 2, line 42, compiler).*

Williams did not explicitly state late bound. **Gardner** demonstrated that it was known at the time of invention to utilize definitions to implement dynamic/late binding, dispatchable (column 7, line 57 to column 8, line 24). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the abstract class

system of **Williams** with a description of dispatch late binding interface to implement as found in **Gardner**'s teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide object interface for as many environments as possible in order to facilitate greater acceptance and use in the marketplace (column 8, lines 20-24).

Claim 14

Williams and **Gardner** disclosed the computer readable medium of claim 13 wherein the first late binding method lacks a call to a separate late binding interface implementation (**Gardner**: the rejection of claim 15 is incorporated herein, for the first late bound method).

Claim 15

Williams and **Gardner** disclosed the computer readable medium of claim 13 *wherein a second late binding method maps names of the one or more late bound methods to corresponding identifiers for run time binding, and wherein the second late binding method lacks a call to a separate late binding interface implementation.* **Gardner** demonstrated that it was known at the time of invention to utilize a dispatch table, which is the functionality described above (column 8, lines 1-15).

Claim 16

Williams and **Gardner** disclosed the computer readable medium of claim 13 *wherein the late binding interface implementation includes a second late binding method for determining the availability of type information, and wherein the late binding interface implementation further includes a third late binding method for retrieving available type information.* However, this limitation is found in the same manner as claim 15, the rejection being incorporated herein using **Gardner**.

Claim 17

Williams and **Gardner** disclosed the limitation wherein the definition information is embedded in a file for the programming language code *(abstract class and class implementation can be in the same file of C++).*

Claim 18

Williams and **Gardner** disclosed the computer readable medium of claim 13 *wherein the generating comprises: identifying type information for an argument of a first late bound method; for the implementation for the first late binding method, generating code for handling the argument with a generic data structure.* However, this limitation is found in the same manner as claim 15, the rejection being incorporated herein using **Gardner**.

Claim 23

Williams disclosed in a computer system, a method of automatically generating client side call site code *(column 2, lines 42 and 52-67)*, the method comprising:

- receiving definition information for interface features of a interface *(column 2, lines 52-60, abstract class)*;
- receiving programming language code for calling a method of the interface *(column 2, lines 52-67)*;
- parsing the definition information and the programming language code during compilation *(column 2, line 42, compiler);*
- based upon information for one or more input arguments of the method, generating code *(column 2, line 42, compiler)*

Williams did not explicitly state type information and late bound and code *for packing the one or more arguments into a generic argument data structure; and generating code for calling the late bound method through an invocation method of the late binding interface, wherein the calling includes passing the generic argument data structure to the invocation method*. **Gardner** demonstrated that it was known at the time of invention to utilize late bound interfaces and methods (column 7, line 57 to column 8, line 24); to utilize packing and unpacking from a data structure (column 8, lines 1-15); and type information (column 8, lines 7-15). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the abstract class system of **Williams** with a description of dispatch late binding interface to implement as found in **Gardner**'s teaching. This implementation would have been obvious because one of

ordinary skill in the art would be motivated to provide object interface for as many environments as possible in order to facilitate greater acceptance and use in the marketplace (column 8, lines 20-24).

Claim 24

Williams and **Gardner** disclosed the method of claim 23 further comprising: based upon type information for a return value of the late bound method, generating code for unpacking the return value from a generic return value data structure *(**Gardner**: column 8, lines 1-15).*

Claim 25

Williams and **Gardner** disclosed the method of claim 23 further comprising: generating code for calling a mapping method of the late binding interface, the mapping method associating a late bound method name with an identifier *(**Gardner**: column 8, lines 1-15).*

Claim 26

Williams and **Gardner** disclosed the method of claim 1 wherein the second dispatch method has a call signature different from each of the one or more other methods *(**Gardner**: column 8, lines 7-11).*

Claim 27

Williams and **Gardner** disclosed the compiler system of claim 7 wherein the late binding interface implementation includes one or more late binding methods each having a call signature different from the one or more late bound methods *(**Gardner**: column 8, lines 7-11)*.

Claim 28

Williams and **Gardner** disclosed the computer readable medium of claim 13 wherein the first late binding method has a call signature different from each of the one or more late bound methods *(**Gardner**: column 8, lines 7-11)*.

Claim 30

Williams and **Gardner** disclosed the method of claim 23 wherein the invocation method has a call signature different from the late bound method *(**Gardner**: column 8, lines 7-11)*.

4. Claim 5, 12, 19-22 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Williams** et al. (USPN 5,467,472) in view of **Gardner** et al. (USPN 6,701,352) as applied to claim 1 and in further view of **Jacobson** et al. (USPN 6,389,491).

Claim 5

Williams and **Gardner** did not explicitly state the method of claim 1 wherein the dispatch interface implementation is part of a dual interface implementation, the method further comprising: generating executable code for directly invoking the one or more other methods through a vtable mechanism at run time. **Jacobson** demonstrated that it was known at the time of invention to utilize dual interface working together (column 4, line 10 to column 5, line 12) including vtable mechanism. It would have been obvious to one of ordinary skill in the art at the time of invention to implement the interface generation system of **Williams** and **Gardner** with dual interfaces as found in **Jacobson**'s teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide a system capable of communicating with as many environments as possible.

Claim 12

Williams and **Gardner** disclosed the compiler system of claim 7 wherein the late binding interface implementation is part of a combined early binding and late binding interface implementation, and wherein the back end module further generates an early binding interface implementation for the one or more late bound methods *(see claim 19 via **Jacobson**)*.

Claim 19

Williams and **Gardner** did not explicitly state *wherein the late binding interface implementation adjoins an early binding interface implementation, the method further comprising: generating the early binding interface implementation for directly invoking the one or more late bound methods.* **Jacobson** demonstrated that it was known at the time of invention to utilize dual interface working together (column 4, line 10 to column 5, line 12). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the interface generation system of **Williams** and **Gardner** with dual interfaces as found in **Jacobson**'s teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide a system capable of communicating with as many environments as possible.

Claim 20

Williams disclosed the limitation:

- *In a computer system, a method of automatically generating an interface implementation* (column 2, lines 42 and 52-67)*, the method comprising:*
  - *receiving programming language code; for one or more methods of an interface* (column 2, lines 52-67, the class implementation)*;*
  - *receiving definition information that defines interface features of the interface* (column 2, lines 52-60, abstract class)*;*

- *generating an interface, wherein the generating includes parsing the programming language code and the definition information during compilation* (column 2, line 42, compiler),

Williams did not explicitly state late bound. **Gardner** demonstrated that it was known at the time of invention to utilize definitions to implement dynamic/late binding, dispatchable (column 7, line 57 to column 8, line 24). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the abstract class system of **Williams** with a description of dispatch late binding interface to implement as found in **Gardner**'s teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide object interface for as many environments as possible in order to facilitate greater acceptance and use in the marketplace (column 8, lines 20-24).

Jacobson demonstrated that it was known at the time of invention to utilize dual interface working together (column 4, line 10 to column 5, line 12). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the interface generation system of **Williams** and **Gardner** with dual interfaces as found in **Jacobson**'s teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide a system capable of communicating with as many environments as possible.

Claim 21

Williams, **Gardner** and **Jacobson** disclosed the method of claim 20 wherein the late binding mechanism maps names of the one or more methods to corresponding identifiers at run time *(**Gardner**: column 8, lines 7-11)*.

Claim 22

Williams, **Gardner** and **Jacobson** disclosed the method of claim 20 wherein the generating comprises: identifying type information for an argument of a first method; for the late binding mechanism, creating code for handling the argument with a generic data structure (**Gardner**: *column 8, lines 7-11*).

Claim 29

Williams, **Gardner** and **Jacobson** disclosed the method of claim 20 wherein the late binding method has a call signature different from each of the one or more dual bound methods *(**Gardner**: column 8, lines 7-11)*.

Response to Arguments

5. Applicant's arguments with respect to claims 1-30 have been considered but are moot in view of the new ground(s) of rejection.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Wood whose telephone number is (571)-272-3736. The examiner can normally be reached 9:00am - 5:30pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (571)-272-3719. The fax phone numbers for the organization where this application or proceeding is assigned are (571)273-8300 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

William H. Wood
October 1, 2005

ANIL KHATRI
PRIMARY EXAMINER